SMART: A HISTORICAL PERSPECTIVE

Michael R. Truelove and Bruce J. Donlin

"Be a world leader in Modeling and Simulation to continuously improve Army effectiveness through a disciplined collaborative environment in partnership with industry, government, and academia."

—SMART Vision

Introduction

This issue of *Army AL&T* magazine is largely devoted to the Simulation and Modeling for Acquisition, Requirements and Training (SMART) concept and its impact on the Army acquisition process. In particular, this article provides a brief historical perspective on SMART and serves as an introduction to the other articles in this issue.

In 1997, Dr. Patricia Sanders, then Director, Test, Systems Engineering and Evaluation (DTSE&E), Office of the Under Secretary of Defense for Acquisition and Technology, provided a DOD vision for Simulation Based Acquisition (SBA). That vision encompassed all the Services and was further defined in the SBA road map that was developed by the Joint Simulation Based Acquisition Task Force chartered by the Acquisition Council of the DOD Executive Council for Modeling and Simulation (M&S). The SBA vision called for "an acquisition process in which DoD and Industry are enabled by robust, collaborative use of simulation technology that is integrated across acquisition phases and programs."

The SBA vision was briefed to all senior leaders of the Services to obtain their endorsement. When LTG Paul J. Kern, the Army's Military Deputy (MILDEP) to the Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASAALT), was briefed, he not only endorsed the concept, he took ownership for the Army.

Kern was the keynote speaker at the first U.S. Army Simulation Based Acquisition Symposium in January 1998, where he defined SBA for the Army as "the integrated process, culture, and environment through which quality products are rapidly and economically developed, fielded, and sustained." He added, "The use of modeling and simulation across all acquisition functions and phases enables the execution of SBA."

Getting SMART

Kern recognized that the SBA concept applied to more than just the acquisition community. The concept required the collaboration of M&S tools that could be integrated and matured throughout the entire life cycle of a system starting prior to concept exploration and continuing through fielding. Further, SBA is not just about system development, but also about the Army's overall modernization process. It is not just about weapon system design and development, but also about requirements generation, tactics, doctrine, leadership development, test and evaluation, training, logistics, and support. Thus, SBA went beyond the research, development, and acquisition (RDA) M&S domain. For the concept to work, it also required endorsement by those in the advanced concepts and requirements; and the training, exercises, and military operations M&S domains. This was an appropriate

time to adopt a new name, so the Army version of SBA became SMART. The new name encompassed the need for collaboration among all those in the three Army M&S domains.

To help institutionalize the SMART concept, Kern designated the following flagship programs: Future Scout and Cavalry System (FSCS), Crusader, Longbow Apache (LBA), and Close Combat Tactical Trainer (CCTT). Each program represented a different level of maturity along the acquisition life cycle (FSCS-concept; Crusader-early development; LBA-legacy; CCTT-information/software intensive). Additionally, each could collectively address the challenges SMART would face concerning the various milestone requirements. Collectively, the four programs represented the scope of issues and challenges the Army would face in harnessing the power of SMART. (Lessons learned from the flagship programs were documented at the SMART 2000 Conference, which is discussed later in this article. Information on the conference is available at **http://www.amso.army.mil/smart/index2.htm**. On the left side, click on **SMART Conference**, and then click on **Last Year's Conference**.)

SMART Conferences

At the SMART 1999 Conference, held in San Antonio, TX, in January 1999, it was evident that SMART was still perceived as an RDA domain-centric initiative. To address this concern, a 1-day senior-level SMART Strategic Planning Workshop was held Aug. 30, 1999, to develop a vision statement and strategic goals for SMART. Members of each M&S domain participated in the workshop. On Nov. 3, 1999, the co-chairs of the Army Model and Simulation Executive Council (AMSEC) approved the SMART vision statement and the following four strategic goals:

- Promote comprehensive M&S policies, a disciplined process, and an efficient workforce to stimulate innovation and agility in developing an enhanced Army capability.
- Establish a means to continuously and quantitatively measure life-cycle cost and relevant measures of effectiveness in a joint environment.
- Create and maintain disciplined collaborative M&S environments for all stakeholders to exchange and reuse data and information to support modernization decisions.
- Establish habitual associations and incentives to leverage the investments and advances of academia, industry, and other government partners.

Also at the SMART 1999 Conference, several actions were identified to improve understanding of the Army SMART concept. Many of those actions resulted in a revision to the standard reference document "Simulation Support Plan Guidelines." Termed the "Planning Guidelines for Simulation and Modeling for Acquisition, Requirements and Training," the revision was first unveiled in January 2000 at the SMART 2000 Conference in Los Angeles, CA. The guidelines greatly expand on best practices to assist in developing a simulation support plan for both concepts and systems. It is intended as a living document and is updated as new lessons learned and as meaningful changes are recommended. It can be accessed on the U.S. Army Model and Simulation Office (AMSO) Web page at **http://www.amso.army.mil/smart/index2.htm**. (On the left side, click on **Guidance Documents**, and then click on **SMART Guidelines**.)

As a result of the briefings during many of the breakout sessions at the SMART 2000 Conference, it was apparent that the SMART concept had matured beyond the RDA domain and needed to be sponsored by an organization that transcended all three M&S domains. The three AMSEC co-chairs decided to serve as proponents for SMART with AMSO serving as their executive agent to implement the concept. The three AMSEC proponents for SMART are Walter W. Hollis, Deputy Under Secretary of the Army for Operations Research; LTG Larry R. Ellis, Deputy Chief of Staff for Operations and Plans; and LTG Paul J. Kern, MILDEP to the ASAALT.

Institutionalizing SMART

From April through September 2000, a number of significant initiatives were undertaken to institutionalize SMART throughout the Army. These initiatives, which were led by Ellen M. Purdy, then Senior Operations Research Analyst in the Office of Assessment and Evaluation, OASAALT, were as follows:

- Initial planning for the SMART 2001 Conference was conducted.
- "Planning Guidelines for Simulation and Modeling for Acquisition, Requirements and Training" was further expanded and refined.
- A comprehensive SMART education plan was developed.

The linchpin of this "transitional" effort, however, was the development of the SMART Execution Plan. This execution plan runs through FY07 and, for the first time, identifies a comprehensive funding plan for SMART. The plan was staffed and officially endorsed by the AMSEC co-chairs on Nov. 6, 2000. The SMART Execution Plan documents the strategy for implementing SMART throughout the Army and can be viewed on the AMSO Web page at **http://www.amso.army.mil/smart/index2.htm**. (On the left side, click on **Guidance Documents**, and then click on **SMART Execution Plan**.)

During the past few years, there has been consistent, methodical, and meaningful progress to advance the SMART concept. There are many more challenges ahead, but the Army has the talent and technology in hand to meet those challenges.

Once implemented, SMART will provide these four primary benefits:

- Reduced total-ownership costs and sustainment burden for fielded systems throughout their service lives;
- Reduced time required to explore concepts and develop and field new or upgraded systems;
- Increased military worth of fielded systems while simultaneously optimizing for structure, doctrine, tactics, techniques, and procedures; and
- Concurrent fielding of systems with their training devices.

SMART Partnerships

One partnership, internal to the Army, is the Army Materiel Command (AMC) Research, Development and Engineering Center (RDEC) Federation. The AMC RDEC Federation is aimed at providing the infrastructure to link the Army's geographically separated RDEC engineering-level tools through high level architecture. With this infrastructure in place, the Army can conduct the system-of-systems analysis needed to develop new systems and upgrade existing systems to operate in a combined-arms, joint-Service, and coalition-force environment.

The Army also established a partnership with academia and the entertainment industry via the consortium of the Institute for Creative Technologies. This partnership is designed to capture what the entertainment industry and academia have to offer and apply it to the Army's defined requirements.

Conclusion

During the past few years, there has been consistent, methodical, and meaningful progress to advance the SMART concept. There are many more challenges ahead, but the Army has the talent and technology in hand to meet those challenges. In some cases, the biggest challenges will be cultural because changing the way we do business often occurs slowly in organizations—especially within the government. One cultural change we need to immediately embrace is that of collaborating. The Army can no longer afford the "not invented here" syndrome. It must begin to share data, information, technology, and capabilities. Without collaboration, there will be missed opportunities, greater costs in developing and maintaining new systems, and developmental timelines that are no longer acceptable. In the SMART articles that follow, you will not only see the positive impact of the SMART concept, but also the beginning of collaboration.

MICHAEL R. TRUELOVE is a Senior Analyst with Science Applications International Corp. (SAIC), supporting AMSO with the SMART transition. He is a retired Naval officer with a bachelor's degree in mathematics from the University of South Carolina and a master's degree in operations analysis from the Naval Postgraduate School.

BRUCE J. DONLIN is a Senior Analyst with SAIC, supporting AMSO with the SMART transition. He is a retired Army officer with a bachelor's degree in engineering from the U.S. Military Academy.
